Remarks

Claims 1-24 were pending in the application, all of which stand rejected. Claims 1, 4, and 12 are amended. Claims 3, 14, and 22-24 are canceled. The specification has been amended to properly state "gamma reference voltages" instead of " reference gamma voltages". No new matter is added.

Priority

The priority document is submitted herewith.

Claim Objections

Claim 4 was objected to for reciting "color-specific second gamma voltage registers" instead of "second color-specific gamma voltage registers." Claim 4 has been amended.

Claim Rejections – 35 USC §112

Claims 12-21 are rejected under 35 USC 112, first paragraph, as failing to comply with the enablement requirement. Specifically, the rejection targets the phrase "... a gray voltage generator coupled to the pixel electrodes ..." based on the fact that the gray voltage generator is indirectly coupled to the pixel electrodes through the data driver rather than directly coupled to the pixel electrodes. The rejection assumes that "coupled" means "directly coupled." However, this construction is contrary to the general use of the word "coupled," which is intended to include both direct and indirect coupling. Page 4 of the Application defines "on" as including both the case where an element is directly on another element and the case where there are intervening elements between the two elements (i.e., an element is indirectly on another element). Similarly, "coupled" includes both the case where two elements are directly connected and the case where there are intervening elements (e.g., data driver) between the two elements.

Claim Rejections – 35 USC §103

Claims 1, 2, 9, 10-13, and 21-23 are rejected under 35 USC 103(a) as being unpatentable over U.S. Patent Application Publication No. 2002/0015028 to Park ("Park") in view of U.S. Patent Application Publication No. 2006/0033695 to Kudo et al. ("Kudo").

Claim 1 is now same as the previously examined Claim 3. Thus, Claim 1 is patentable over a combination of park and Kudo. Claims 2, 9, 19, and 11 depend from Claim 1 and are also patentable over Park and Kudo.

Claim 12 is now the same as the previously examined Claim 14. Thus, Claim 12 is patentable over Park and Kudo. Claims 13 and 21 depend from Claim 12 and are thus patentable over Park and Kudo as well.

Claims 22 and 23 are canceled.

Claims 3, 4, 6, 8, 14, 15, 17, 19, 20, and 24 are rejected under 35 USC 103(a) as being unpatentable over Park and Kudo and further in view of U.S. Patent No. 5,663,772 to Uehara ("Uehara").

Claims 1 and 12, which are the same as the previously examined Claims 3 and 14, are patentable over Park, Kudo, and Uehara because they recite, "... first and second color-specific gamma voltage registers [that] store digital gamma voltages received from the signal controller for a specific pixel color ...." As shown in FIG. 4 and described in the paragraph starting at page 5, line 30 of the subject Application, the gray voltage generator 800 includes first and second gamma registers 810, 820. As stated on page 6, lines 6-9 of the Application, the internal structures of the gray voltage generator 800 shown in FIG. 4 concern only one color, and there may be other sets of registers for other colors. Thus, each set of gamma registers 810, 820 in the gray voltage generator 800 shown in FIG. 4 stores the digital gamma voltage for one pixel color and produces gray voltage signals for one pixel color.

While page 8 of the Office Action dated May 3, 2007 ("the Office Action") states that Uehara's FIG. 1 teaches the idea of including first and second registers in a driving circuitry in order to temporarily store image data before the data is processed, Uehara fails to teach that its registers store digital gamma voltages for a specific pixel color. In fact, Uehara's line registers 1031, 1032 are part of a memory unit for writing the pixel data from the font ROM 102 that stores character font data (Uehara, col. 6, lines 31-49), and is not part of a gray voltage generator that generates gray voltage signals as recited in Claims 1 and 12. Uehara, at best, discloses that line registers can be used for data storage and does not go any further to teach or suggest that they may be a part of a gray voltage generator. Moreover, Uehara fails to teach that separate sets of line registers can be incorporated into a gray voltage generator for separate processing of different colored data. While

Kudo discloses processing different colors separately in its control register 301, it fails to teach using separate circuitries in its ***gray voltage generator*** (302), each of which generates gray voltage signals for one pixel color. Thus, Park, Kudo, and Uehara, even in combination, fail to teach a gray voltage generator that has separate circuitries for processing different pixel color data, wherein each circuitry includes first and second registers for storing digital gamma voltages for a specific color.

In fact, Kudo teaches a gray scale voltage generating circuit 302 (which would correspond to the "gray voltage generator" of Claims 1 and 12) that is differently structured than what is recited in Claims 1 and 12. Kudo's FIG. 3, for example, shows a gray scale voltage generating circuit 302 that uses a resistance ladder 307, selector circuits 308-313, an amplifier circuit 314, and an output unit resistance ladder 315. Nowhere in Kudo's specification is it taught or suggested to incorporate color-specific sets of registers in its gray voltage generator.

Claims 4, 6, and 8 depend from Claim 1 and are thus patentable over Park, Kudo, and Uehara for the same reason as Claim 1. Claims 15, 17, 19, and 20 depend from Claim 12 and are thus patentable over Park, Kudo, and Uehara for the same reason as Claim 12.

Claim 24 is canceled.

Claims 5 and 6 are rejected under 35 USC 103(a) as being unpatetnable over Park, Kudo, and Uehara in view of U.S. Patent No. 6,215,468 to Van Mourik ("Van Mourik"). These rejections are based on the assumption that Park, Kudo, and Uehara teach all the elements of Claims 1 and 12 (previously Claims 3 and 14). However, as explained above, the combination of Park, Kudo, and Uehara do not teach or suggest a gray voltage generator that has separate circuitries for processing different pixel color data, wherein each circuitry includes first and second registers for storing digital gamma voltages for a specific color. Hence, Claims 5 and 6 are patentable over Park, Kudo, Uehara, and Van Mourik.

Claims 7 and 18 are rejected under 35 USC 103(a) as being unpatentable over Park, Kudo, Uehara, and U.S. Patent No. 5,091,722 to Kitajima ("Kitajima"). These rejections are based on the assumption that Park, Kudo, and Uehara teach or suggest all the elements of Claims 1 and 12 from which Claims 7 and 18 depend, respectively. However, as explained above, Park, Kudo, and Uehara fail to teach or suggest a gray voltage generator that has separate circuitries for processing different pixel color data, wherein each circuitry includes first and second registers for storing

digital gamma voltages for a specific color. Hence, Claims 15 and 17 are patentable over a combination of park, Kudo, Uehara, and Kitajima.

Conclusion

Based on the foregoing, Claims 1, 2, 4-13, and 15-21 are now in condition for allowance. Please telephone the undersigned attorney at (408) 392-9250 if there are any questions.

Respectfully submitted,

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